Name _____ Science # ____ Date _____

# Variables – Study Guide

MANIPULATED VARIABLE – The factor in an experiment that is being changed.

- *Manipulated or "Independent" variables answer the question "What do I change?"*

Scientists call the variable that is purposely changed the manipulated variable. When designing an experiment as a beginning researcher, you choose only _____ variable that you purposely change. Why? If you change more than one variable, you may never know which _____ caused the response.

RESPONDING VARIABLE – The variable in an experiment that is observed and may change. The outcome or result is based on this observation.

- *Responding or "Dependent" variables answer the question "What do I observe?"*

The _____ variable in an experiment is the dependent variable. It is a factor or condition that MIGHT be affected as a result of the _____ variable.

CONSTANT – Conditions that are kept the same for all trials in an experiment

- *Constants answer the question "What do I keep the same?"*

Things that are kept the _____ in an experiment are called constants. That is, they are the things that remain UNCHANGED. Certain things must be kept the same in order for the experiment or test to be _____.

SEE BACK FOR PRACTICE

# Identify each variable for these experiments

1) You are planning an experiment to find out whether the rate at which water freezes depends on the size of its container (each sample used a different sized container). All samples used the same amount of water and were placed in the same freezer for the same amount of time.

Manipulated variable _____

Responding Variable _____

Constant _____

Constant _____

Constant _____

2) Researchers wanted to determine the best temperature for storing batteries. The batteries were all AAs from the same package and stored for three years. Sets of batteries were stored at three different temperatures. A battery tester was used to determine the amount of power left in each battery.

Manipulated variable _____

Responding Variable _____

Constant _____

Constant _____

Constant _____

Constant _____